EXHIBIT 31

Memorandum Nov. 1928 by Wm. Reed re Engle's Report

Walker River
Engle Report
made by
Nov 1925

MEMORANDUM

On Engle's report on "Water Supply and Storage Investigations of Walker River Indian Reservation, Nev." Dec., 1926.

This report has never been approved by the Commissioner of Indian Affairs. It was submitted to the Indian Office on December 29, 1926, and a supplemental report was submitted February 14, 1927.

Upon request it was sent to Congress, and printed as House Document No. 767, 69th Congress, 2d Session.

The report was intended to be upon the feasibility of a storage reservoir with studies of plans for dam and other necessary structures and estimates of the cost of same; however, Mr. Engle seemed to think that it was necessary to advocate and justify the construction of a dam and storage reservoir, and therefore, in addition to surveys, plans and estimates for dam and other structures, he submits data and draws conclusions from same to the effect that a reservoir is necessary in order to make full and economical use of the waters of the Walker River. Mr. Engle goes so far in his conclusions that he states that should the original conditions be restored to Walker River, and should the Indians be awarded the first right to sufficient water for their irrigable lands, there would be a full and constant supply of water for only 4,000 acres. (See page 92 of the printed report; also see page VI - "Summary and Conclusions" of same document).

These conclusions are based upon hydrographic data gathered by the U. S. Geological Survey, the Reclamation Service and the Walker River irrigation district, and upon personal investigations and observations by Mr. Engle.

The personal investigations and observations pertained to loss of water during transmission.

The condensed hydrographic data is found on pages 13, 14 and 15 of the published report. From this data alone it would be impossible to arrive at the conclusions reached by Mr. Engle. Except for the one year of 1924 in the 23 years of record there would have been water sufficient to have made average crops on 10,000 acres unless it was lost between the points of measurement and the Indian lands.

It is upon these probable losses that Mr. Engle enters the calculations with his personal studies and observations. The method of these studies and observations is not made known in the report except a few instances where water has been turned down to the Indians by the whites. The conditions under which the losses were measured are such that little real and substantial data was secured.

In I. T. Whistler's report, 1926, recorded on page 29 of the printed Engle report, it is shown how the losses were determined during a short run of water in August, 1926. It will be noted that the run of water took place beginning August 12, and continued five days, although some water continued to enter the district of Indian lands for two days longer.

It will also be noted that the test was made while after the river had been dry for sometime. It is known by all who have observed that the river-bed is filled with a loose and porous sand which will absorb water until all the voids are filled with water. No tests of the amount of sand that must be loaded with water or the total per cent of voids is anywhere recorded in the Engle report. Without some idea of this amount there is no way of calculating the true losses as recorded by Whistler and King, and this so called test cannot be used as a measure of losses should the original river conditions as to continuous flow and absence of obstructions be restored. Other citations of losses are made but have no more scientific backing than the instance above mentioned.

Mr. Engle's letter of transmittal with summary and recommendations, dated Blackfoot, Idaho, February 14, 1927, and which accompanies the supplemental report, is in fact an argument in favor of building a reservoir for service to the Indian lands. The economic features are set forth in very good manner, and one can probably believe that such a reservoir as proposed by Mr. Engle would materially benefit the Walker River irrigation district when taken as a whole, but it does not prove that the Indians who have 10,000 acres at the lower end of the system, and who the Government contends have the first water right on the river, should pay for the cost of construction of such a reservoir.

The hydrographic data submitted does not bear out the conclusion that if original conditions along the river were restored there would be a serious shortage of water for the Indian lands every other year or at least one-half of the time.

In order to justify this above conclusion enormous losses must be assumed, and the data in the report does not prove such enormous losses. Mr. Engle acknowledges this in his statement on page 91, last paragraph (printed report) which is as follows:

> Stream flow in a river system such as the Walker River is an extremely complicated problem, being affected by innumerable continuously varying factors. As indicated in our previous report, it would be impossible under present conditions existing along much of Walker River, especially the numerous crude and bungleseme diversions in Mason and Antelope Valleys, and the inefficient and unsatisfactory methods of river management and control, to carry on with any degree of accuracy the investigations necessary for even an approximate determination of stream losses, return flow, lag, etc. Even under satisfactory conditions such investigations to be of value would of necessity have to be extended over a period of several years.

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This work accordingly was not attempted as a part of the present investigation. The problem in this case would be to determine as closely as possible the stream flow of Walker River at the reservation diversion point as it would exist if natural conditions in the upper valleys could be restored; that is, if no agricultural development existed above the reservation, and the same conditions existed as at the time the reservation was established.

In order to arrive at the conclusions that he presents he has to call into the calculations his personal experience and observations at other places. How much this experience and observation at other places should be allowed to enter into this problem is open to serious question.

My own experience in irrigation matters covering a period of 40 years does not lead me to the same conclusions arrived at by Mr. Engle.

I would require much more data than is presented in the report under discussion before I could concede such enormous channel losses as are assumed in Mr. Engle's report.

The report was not carefully and thoroughly examined and studied before a copy was allowed to fall into the hands of others than Bureau officials. It has never so far as I know been approved by any one with authority to approve, and is simply Mr. Engle's own report, embodying his own individual ideas, and does not voice the judgment or ideas of the Bureau or Department.

W. M. Reed

11-2-28